The RARS *EXCITER*

Issue 252 - March, 1991 - Club Repeaters: 146.04/64 , 223.04/224.64 , & 444.5/449.5

You're Invited!

RARS Birthday Party:
Wednesday, March 6th
YMCA, 1601 Hillsborough St.

Pizza Served Promptly at 7:00 PM

If you need to buy a ticket, come early! (Ticket sales start at 6:30 PM)

All you can eat pizza, including salad, soft-drinks, coffee / tea, & birthday cake. $3 per person.

For RARS Members, their families and guests.

Please call Anita, KC4AQB @ 846-7455 & let her know how many you're bringing!!

The Raleigh Amateur Radio Society, Inc. (RARS), founded in 1969, has grown to be one of the premier radio clubs in North Carolina. Current membership exceeds 300.

The objectives of the club are to promote world wide friendship through Amateur Radio; to be of public service by providing radio communication in times of disaster, emergency, or civic need; to educate members in radio technique, and to assist in obtaining Amateur Radio licenses.

All persons interested in Amateur Radio, currently licensed or not, are eligible to apply for membership to the club.

Dues to the club are $10.00 per year (which runs from July 1 to June 30). Applications for membership may be obtained from any of the officers named below; from the newsletter editor, named on the facing column; or at any RARS Meeting.

Club meetings are held the first Wednesday of every month, 7:30 PM, at the Raleigh YMCA, 1601 Hillsborough St.

In addition to the many social and special events, the club sponsors a 2 m repeater, W4DW, on 146.04/64 MHz; on 223.04 / 224.64 MHz, & 444.5 / 449.5 using the call WA4PEN. All repeaters cover Raleigh, and most of the surrounding Wake County area. Autopatch privileges are available on W4DW to duly licensed RARS members. Future plans call for additional repeaters on the 50 MHz amateur band.

1991 Officers:

President:
Jim DuBreck, N4BYO
1209 Shelly Road
Raleigh, NC 27609
781-9437

Vice President:
Anita Kellum, KC4AQB
208 Chatterson Drive
Raleigh, NC 27615
846-7455

Secretary:
Ronny Reams, WA4MJF
3509 Rolesville Road
Wendell, NC 27591
266-4434

Treasurer:
Tim Buehlmann, N4IQA
1314 Chaney Rd.
Raleigh, NC 27606
851-7738

The EXCITER is published monthly by the Raleigh Amateur Radio Society, and is mailed at no cost to its members.

Letters to the Editor, technical articles, items of interest to the ham community and guest editorials are actively solicited.

Any article published in the EXCITER does not necessarily represent the views of, the Officers, Board of Directors, Editor, or Society Membership, nor does publication thereof represent concurrence by the Officers, Board of Directors, Editor, or Society membership with the contents of the article.

Articles will be printed at the discretion of the Editor, and no article will be published unless it is accompanied by the name(s) of the person(s) submitting the article.

All copy must be in the hands of the editor by the end of the Board of Director's meeting on the third Wednesday of each month. Articles submitted for publication may be hand or type written, an ASCII file on disk (IBM or APPLE format), transmitted electronically via telephone modem, or on the ham bands using RTTY or PACKET.

Ham related items for sale by the members will be advertised without charge for one issue, but may be re-submitted as often as desired. These ads must be non-commercial in nature.

Commercial ads will be run in return for the following donations to the club:

	Single Issue	**Full Year**
Business Card	$5.00	$25.00
Quarter Page	$10.00	$50.00
Half Page	$20.00	$100.00
Full Page	$30.00	$150.00

(Commercial ads must be of "camera-ready quality," and obviously can not be sent via ham bands.) Due to the reprographic process used, no color copy can be accepted.

Advertisers are guaranteed a minimum monthly mailing of 400 copies.

Editor:
Vince Yakamavich, AA4MY
220 Carriage Trail
Raleigh, NC 27614
847-8512 (Home)
850-5390 (Office)

SPECIAL SERVICE CLUB

Young Ladies' Radio League

AMSAT

Southeastern Repeater Association Member

Minutes of the Meeting

The regular monthly meeting of The Raleigh Amateur Radio Society was held on 06 Feb 91 at the YMCA on Hillsborough Street. President Jim DuBreck called the meeting to order and welcomed the 102 members and guests present.

Tim, N4IQA, announced that non-profit status for the club is progressing but a CPA is needed to donate services. Anyone that can help please contact Tim or Pres. Jim. He also reported that the club has 360 members.

Jim, N4BYO, showed to those present the Dan Beard District Certificate that RARS received.

Ed, WA4PEN, explained the rules for the 9:00 PM Friday night Traders Net. Asking prices only - no negotiating on the air. There is a 3 item limit, and items must be related to ham radio and computers. He also asked hamfest teams to keep him informed of people signed up to help. Help is weak in ticket sales and outdoor parking.

Paul, NO0T, announced that he had information on packet radio clusters for interested hams.

Bob, N4VQN, informed everyone that 53 people were presently registered for the Novice/Tech class starting Feb 19th. It looks like another large class.

Lynn, KC4NJB, reported that there are presently 3 Ham Helpers but 5 are needed. Those willing to help, please contact Lynn.

Anita, KC4AQB, announced that the next RARS meeting would be a RARS birthday/pizza party at 7:00 PM 06 Mar 91. Pizza, salad, drinks, cake, door prizes, and awards will be the order of the evening. There will be a $3.00 charge per person. Anita also requested all those with items for the RARS hamfest table please contact her. In addition, two more volunteers are needed for the table. She passed out a RARS meeting program questionnaire form for members to indicate their preferences of possible program ideas.

Jim, N4BYO, reported on House Bill HR 73 that concerns replacing ham radio frequencies that are taken by the FCC. The membership voted in favor of RARS supporting the bill by contacting congressman David Price.

Tom, KN4LB, announced that the ARES call-up roster ofvolunteers would be printed and handed out at the March RARS meeting.

Ron, AA4VK, said that he can check QSL cards for hams working on awards rather than sending them to the ARRL. Contact him if you need this service.

Lynn, KC4NJB, reported that the YL group (The Crystals) will hold their next bi-monthly meeting in March at the Tower Shopping Center Golden Corral.

The program on field days was an excellent one by Bob, NA4G, and Gary, NA4AQ.

Door prizes were won by Bill, W2BBN; Joel, KC4UQE; Bruce, N4UOD; and Tom, N4ZDC.

The meeting adjourned.

Glenn Clary, WA4LHE
Acting Secretary

● ●

Welcome New Members!!

Let's extend a warm RARS Welcome to 8 new members:

Marcus R. Frear, Durham, awaiting Tech call,
Pat Hines, Chapel Hill, no call (yet)
Tom Kuhn, KA5QFN, Raleigh
James Launis, KA0LYE, Franklinton,
Dallas E. Mays, Knightdale, awaiting Tech call
Richard Merkle, KA3PSK, Raleigh
Wayne McKendry, W8LUM, Cary, and
Henry Pollock, WB4HFL, Raleigh

As always, we wish you welcome into our most "humble" organization. We hope that you will choose to become active in the many happenings within RARS. Certainly, the more active you become, the more enjoyment you will receive. With the addition of these fine folks, the roster stands at 366!

Again, WELCOME!!

VHF/UHF & 2-METER SIG REPORT

We held our February SIG meeting on the 14th at the QTH of Ronnie and Sherry Reams.

The Following hams were present: WA4PEN, AB4OZ, K4SAN, WD4MYM, KC4JJZ, KC4NJB, WA4MJF, KA3PSK, N4UOQ, N4SSU, KB4MDZ, KN4AQ, KC4GFR, KC4OCB, KB4EXL, and KB4VYP.

Ed, WA4PEN, called the meeting to order and made a few announcements about upcoming club events. Glenn, WA4LHE, gave a brief treasurer's report.

Chuck, KB4MDZ, discussed the RARS communication plan with the following items of concern: (1). A 220-440 Mhz link for our repeaters. (2). A UHF control receiver for the 2 meter repeater. He has some equipment that could be purchased. (3). A backup 2 meter repeater. He has some equipment that could be used for that purpose. (4). Security enhancements for the repeaters.

Alan, AB4OZ, reported on the status of the 444.95 Mhz repeater. The antenna was found on a trip up the tower. It is a fiberglass stick (Phelps-Dodge) located about 30 feet from the top and on the south-west face of the tower. A new delay timer is installed on the power line to prevent power "glitches" from locking up the controller. New cables have been obtained for the duplexer but have not been installed yet.

Ed reported on the status of the 444.5 Mhz repeater. The receiver is off frequency. Gary, KN4AQ, is helping him locate another TCXO.

Ed also reported on the status of the 220 Mhz repeater. It is up and operational but may still have a VSWR problem which will be be checked out.

Ed gave an informative presentation on the block diagram and operation of the W4DW repeater transmitter.

Chuck will give a presentation on frequency synthesizers at the next SIG meeting.

The meeting ended and we "stormed" the kitchen where some of KB4EXL's delicious desserts awaited.

Glenn Clary, WA4LHE
SIG Secretary

Public Service Watch

A Word from RARS' new Public Service Chairman

Let me begin by introducing myself. I am KC4UQO also known as Bill Bressler. I am a graduate of the Fall '90 RARS Novice/Technician class and have been a RARS member since then. While I have been a member of clubs in the past, I never was active, except for the occasional meeting I would attend. Because of this, I never got very much satisfaction out of my membership in clubs past.

Since RARS is such an active club, with a good percentage of members attending regular meetings, I deceided not to be a member on paper only. I have therefore taken the position of Public Service Chairman (acting).

This introductory article is my first solicitation for a general list of volunteers who might be available and/or interested in Public Service type activities. Hopefully we will have have some advanced notice, especially for larger events, but there will always be last minute appeals. If you have participated in Public Service events in the past, or if not, and are NOW interested in becoming active in this most worth while aspect of Amateur Radio, please call me.

Finally, if any member of RARS is approached by any organization seeking communications support for any Public Service activity, you may refer them directly to me @ 677-1891 (H) or 850-5337 (W).

73

Bill, KC4UQO

• •

Hamfest Help Still Needed!

The RARS Hamfest is RAPIDLY approaching (APR 14!). If you havn't already volunteered to help, please consider the following: Ticket Sales at Door, 2 shifts open 8 AM - 10 AM, and/or 10 AM till Noon. If interested, call Walter, AB4DQ @ 782-1424.

Several shifts are also open at the RARS Table. If you can help, call Anita, KC4AQB @ 846-7455.

VE Report

The February 6th exams drew an even 20 applicants, who took a total of 47 exam elements. Success by element was 65.7%, with a high of 100% (5 people passed Element 2 + 1 passed 20 WPM), and a low of 28% (only 2 of the seven who tried passed 4A (Advanced theory)).

We congratulate the following:

Peter St. Wecker, N4YRJ, Advanced
Dallas E. Mays, KC4UVQ, Advanced
Liz Gordon, KC4UCI, General
John Blizzard, N4HAJ, General
Thomas P. Kieffer, KB4MEB, General
Richard Merkle, KA3PSK, Technician+
George Stevens, Technician+
David Sinnott, Technician
Arthur C. Everett, Jr., Technician
Michael George, Technician
Gary Peele, Technician
Edward W. Outland, Technician
Al Johnson, N4UOF, General Written
Mark Thompson, KC4OCB, General Written
Alexander Simmons, KN4GG, 20 WPM code

For several of these folks, these exams was their first visit to RARS. We hope you'll be back!!

In addition to the examinees having a good night, so did the examiners: we signed up 4 new RARS VEs! **K3AYS, KN4OO, N4VZQ,** and **W4TZU** now "officially" join the ranks of the RARS VEs. Welcome!

The highlight of the evening was **Liz Gordon**, KC4UCI, who is the >> **FIRST** and **ONLY** one << from the RARS Fall '90 Class to go beyond Technician. When asked if she spent a lot of time operating HF, she said no, she's only worked one or two stations. But she said she spends a lot of time copying W1AW CW bulletins! The practice shows!! (To all of Liz's male class-mates: Come on guys!! You're not gunna let a YL get away with this, are ya??)

Almost on equal footing as the highlight of the evening was **George Stevens**, a gent from Durham who finally earned his Tech+. George was in the past RARS class and passed element 2, but seemed to get real nervous and "freeze-up" whenever he heard the code. Now keep in mind with the advent of the codeless Tech license, George could have just come in and taken Element 3A for a Tech ticket, but he chose to stick with the code, and he passed it! George said earning an amateur radio license has been a goal he's had for many years. Due to other obligations, however, that getting that "ticket" has had to take a back seat to other tasks. But his perseverance has paid off: he's finally done it, and he can hold his head high for sticking with the code. Congratulations, George!

On the down side of the evening, we can thank "Boat Anchor Bob," NA4G, for providing a real challenge to the folks taking a CW test. Bob was next door, playing a tape from Field Day, complete with very loud CW QSOs. In the exam room, folks were having a real time taking the test thru heavy QRM! We got Bob to go QRP -- and the test takers were able to continue.

VE's working this session were: **Terry Murphy**, AB4VJ; **Steve Modena**, AB4EL; **Martha Silver**, NY4H; **Jim Smith**, AB4TD; **Alan Pitegoff**, AB4OZ; **Bill Ransier**, N1BA; **Jim Fisher**, K3AYS; **Joe White**, WA4GIR; **Paul Sims**, WB4YBF; **Sherman Starnes**, W4TZU; and **Pete Memolo**, KN4OO.

In closing, I'd like to thank each and every VE who has helped out during the past year. The VE program at RARS is a success because of **YOUR** efforts. I continue to be amazed with the volunteer spirit of the VEs. The RARS VEs: it's certainly an honor to be associated with these fine folks!

Next area exams: Sat., March 9th, Durham. Call Pete, KY4Y @ 544-3215 for info. **Tues., Mar 26th,** RARS Training Class, McKimmon Center, AA4MY for info (847-8512). **Sunday, April 14th.** RARS Hamfest. Pre-registration REQUIRED!!

• •

KC4UQD & KC4UQE Now Proud Parents!

Congrats to Debbie (UQD) & Joel (UQE) Reames on the birth of their son, Robert Joel Reames. Both parents were in the last RARS Class. (What did they teach 'em at that class!!??) **Best of Luck** to u all!

RARS Crystals Active!!

The January meeting of the RARS YL group ("The Crystals" met at the Golden Corral in Garner. **Twenty one women attended**, with both hams, and YLs of hams attending. There were quite a few new faces, and we hope they will all be back, (and bring several more YLs as well!!)

Lynn Pitegoff, KC4NJB, gave a short talk about ham radio nets, their purposes and proper operating procedures.

Anita, KC4AQB and Nola, (XYL of WA4PEN) showed beautiful sweatshirts they had made with "RARS Crystals" on it. They are working on a project where we can each make our own (fun to wear at the rarsfest, show how many women are involved).

The next meeting of the RARS Crystals will be on Thursday, March 21st, 6:30 PM at the Golden Corral on Western Blvd. in Raleigh.

Ladies: stick your OM with watching the kids, and come on out for the RARS Crystals Ladies Night Out! It's only every other month!!

Also, don't forget the RARS YL net, every Wednesday, 9:30 PM on the RARS 04/64 repeater. No license yet?? Get the OM to key the microphone for you!!

33

Lynn Pitegoff, KC4NJB

• •

Homebrew SIG Meeting

We all had a good time at the February meeting trading radio and electronic computer software. N1BA demonstrated how to make a 5/8 wave 2 meter antenna for less than $10:00.

At the March meeting we are going to have more on LINEAR AMPLIFIERS by a man who has built several of them. He will also tell us how to use them and when to use them. He is our own "BOAT ANCHOR" Bob Keys.

Next meeting: Wednesday, March 13, 7:30 PM at the home of N1BA, 8200 Hambledon Ct., Raleigh. Talk in on 04/64. 73!!

Bill Ransier, N1BA

HF SIG Report

The PLACE for the regular HF SIG meeting will be the home of new RARS member Doug Sweet, KC4UPZ, @ 922 Northwoods Drive, in Cary.

The speaker will be Floyd Sense K8AC and his topic to members of the SIG will be:"How to repair Heathkits Found at Hamfests". This should be a super meeting with Floyd helping us separate what is worth working on from what is not. Meeting will be Tuesday, March 19th, 7:30 PM. Talk In on 04/64.

--See ya'll there.

Al Johnson, N4UOF

• •

RARS Trader's Net Off to a Good Start

Ed Alderman, WA4PEN reports that the Trader's Net is off to a good start! The weekly net was started to assist local hams find that used "treasure" that may be gathing dust in some other ham's basement!

Ed says he's averaged about 8 or so check-ins per session, and there has been some real interesting equipment offered! Even a "mobile" 70' crank-up tower!!

As an added benefit to RARS members, Rick Yost, N4VQT was reported to be transcribing the items listed on the net for sale, and up-loading that list to the RARS bulletin board!

We're sure that this net (which meets every Friday, 9:00 PM on the RARS 04/64 repeater) will grow by leaps and bounds when the word gets out to surrounding clubs. Net control stations are still needed. Interested in helping?? Get up with Ed, WA4PEN!!

• •

Durham / Chapel Hill Members Car Pooling to RARS Meeting!

I overheard "Colt" KC4UQG coordinating things on the RARS 04/64 machine last month. With the growing number of RARS-ites living in these areas, it makes sense to me!! **Excellent idea, Colt!!** (Good way to meet your fellow RARS members, too!)

Congrats to EXCITER Authors!!

One of the "tricks" we Editors use to keep the newsletter full of (hopefully) interesting information is to exchange newsletters with other clubs and organizations. In RARS, we swap newsletters with about an even dozen or so other clubs up and down the East coast, and across the country. If an "outside" article looks exceptionally good, or if it can be easily modified to be applicable to our area, then it gets used (of course with full credit to the author & club in the by-line).

It always gives me great pleasure to see articles that originated in our RARS Exciter gracing the pages of other club's newsletters. THEIR editors thought OUR articles are exceptional!

In reviewing the January set of other club's newsletters, we see that the "Frugal 40" article, written by our own **Larry Young, K4LXV**, made it into the Ham News Outlet paper from Broken Arrow, Oklahoma! Also, another of **Steve Modena's (AB4EL)** Making Antennas Play series was picked up by the Amateur Radio News Service, as well as by the Bluegrass ARA in Lexington Kentucky. Way to go guys!! There may not be much "fortune" in writing for the Exciter, but there is a chance for fame!

The United States of Europe??

Completing Mike Gingell's detailed presentation (February Exciter) of the administrative conditions encountered by US hams working in Europe, I find it interesting that the inter-European ham activities already show unmistakable signs of something like Europe's United States emerging.

A European, temporarily working within another European country, no longer requires a specific reciprocity license (assuming both countries are members of the newly formed ''European Community (EC)''.

European (EC) licenses these days carry -- in four languages -- the following: ''The licensee is entitled to hold and use his amateur radio station in accordance with the CEPT Recommendation T/R 61-01.''

Wouldn't that CEPT-thing be something to suggest to the ARRL and FCC?? Think of the paper work eliminated!! There are ''international driver's licenses. Why not an ''international ham license?''

Robert Brunn, AB4QT

[Ed. Note: As a joke, I threw back a question to AB4QT using a term I just recently heard -- I asked how many ECUs (pronounced ''eck-oou'') this license costs. Without blinking an eye, he replied ''None. It's free.'' For those RARS-ites who might not know, the ECU is a ''European Currency Unit.'' I don't know if I was successful in impressing AB4QT with my knowledge of the ECU, but I'll sure never try to stump him again!]

Stolen Equipment

Haiti - (via World Radio) An entire commercial AM broadcast station was stolen in the capital city of Port au Prince last Spring. ***Within a 3 hour period***, unkown individuals ***removed two transmitters***, a ***160 foot tower*** [!], and ***the entire buried ground mat*** [!!] of Radio Liberte from its downtown site. Last year, soldiers loyal to General Avril machine gunned the stations transmitters, causing $10,000 damage. Replacement of the equipment stolen from the station will cost an estimated $100,000.

Westlink Report
10/12/90

Mid East Listening

British Forces Radio	17.695Mhz	???
Radio Baghdad (?):	13.660MHz	2000Z - 2200Z
	11.830MHz	0300Z - 0350Z
United Arab Emirates:	13.675MHz	0300Z - 0400Z
	15.400MHz	0300Z - 0400Z
	15.435MHz	0300Z - 0400Z
Voice of Turkey:	09.445MHz	0300Z - 0400Z
	17.880MHz	0300Z - 0400Z
Radio Cairo	09.475MHz	0200Z - 0300Z
	09.675MHz	0200Z - 0300Z

THE G5RV

An All Band DX Antenna For The Novice Or Extra

---

by

Paul Mueller - K9PM

After taking down my short lived Carolina Windom antenna last month, I decided to construct another so-called "all band" antenna for use on 80-10 meters. I decided on the G5RV, a center-fed antenna named after the call sign of its inventor, Louis Varney of England. Steve Modena, AB4EL, wrote about this antenna in the November EXCITER and I had used a commercial one a few years ago, so I decided to build one from scratch. I won't go into the theory of the antenna since Steve did a good job explaining it in his article. Instead, I'll tell you how I constructed it and what my on-the-air results have been to date.

The G5RV is a center-fed antenna, with two equal 51 foot lengths of wire, connected in the center to a 30' 4" length of either 300 or 450 ohm (transmitting-type) ladder line. The other end of the ladder line is connected to a length of RG-8X (50 ohm) coax which runs to the transceiver or transmatch in the radio shack. The folks at Radio Works report that a 90 foot section of coax works best for matching the antenna to the radio. I don't know exactly how long my own RG-213 coax is because it has been buried underground from the radio shack out to the woods behind the apartment for several years now, but it is probably something on the order of 200 feet long.

PARTS NEEDED

This antenna is ready made from a number of vendors including Radio Works (P.O. Box 6159, Portsmouth, VA 23703 - Telephone 804-484-0140). Radio works sells a basic G5RV (they have several models) for $29.95 without coax. For another $17.95 you can purchase 100 feet of RG-8X with PL-259 connectors on both ends. If you want to experience the satisfaction of constructing your own, as I did, you will need the following items:

* 104 feet of hard-drawn or copper clad antenna wire (I used some nice teflon jacketed, stranded copper wire I had left over from my 40 meter V-Beam Field Day antenna)
* 32 feet of ladder line (300 or 450 ohm)
* 3 plastic insulators (Radio Shack, etc.)
* A SO-239 connector (I used a Radio Works HQ-1 connector)
* 90 feet (or necessary length) of 50 ohm coax with a PL-259 antenna connector on each end
* 3 hunks (how many feet is a hunk?) of 250 lb. or better nylon rope
* Antenna launching system (slingshot, fishing line, lead weights)

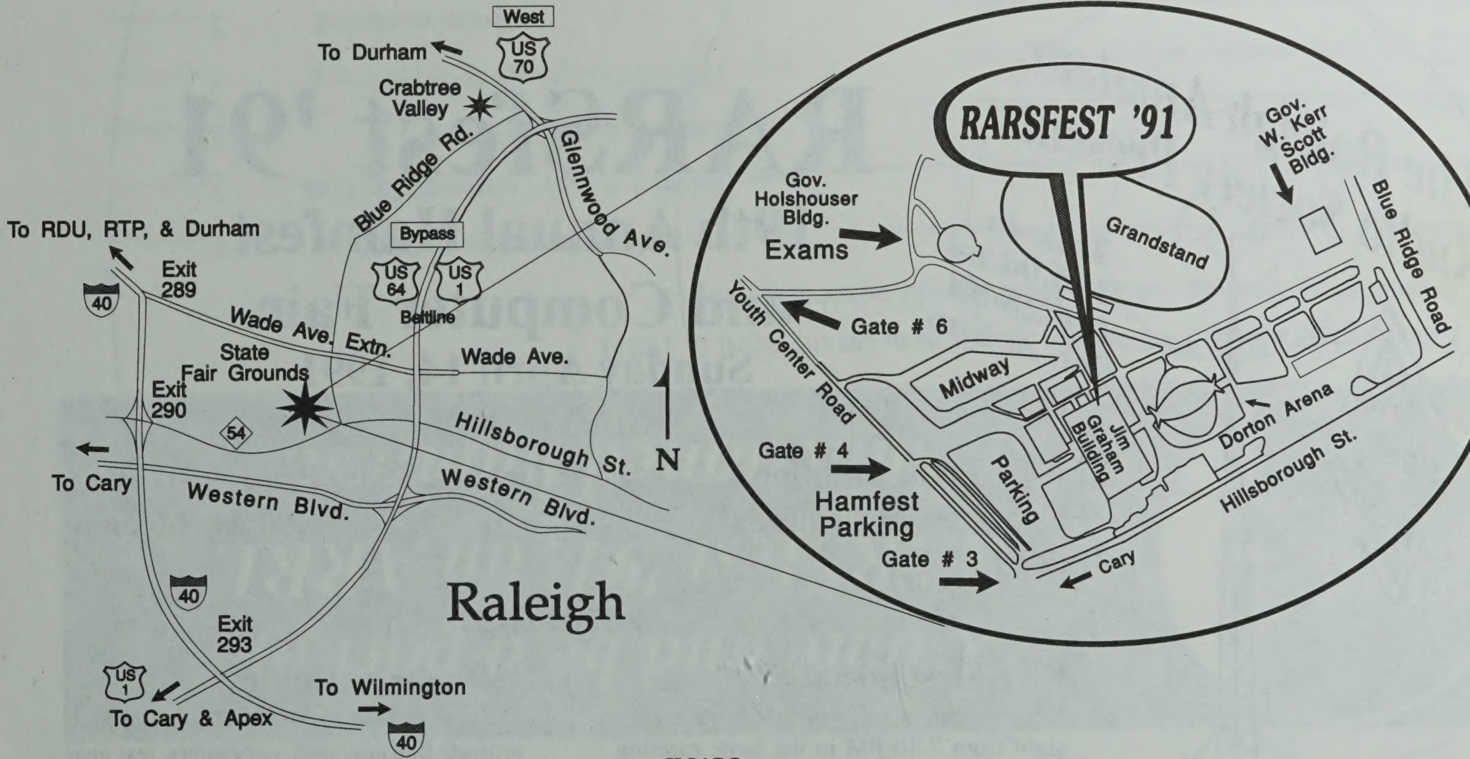
CONSTRUCTION DETAILS

Measure and cut 2 identical sections of antenna wire, each 52 feet long. Securely attach an end insulator to each of the antenna wires. Securely connect the free end of each antenna wire to opposite sides of the center insulator. Adjust the length of each wire to exactly 51 feet between insulators, and leave two 3 inch pigtails on the wires attached to the center insulator. Your total antenna length should be 102 feet plus the length of the 3 insulators.

Strip an inch of insulation from each of the conductors on one end of the ladder line. Clamp the same end of the ladder line around the center insulator with wire ties or a plastic clamp for mechanical strength (remember that this will have to support the weight of the ladder line and coax). I also taped mine for extra measure. Solder the bare conductors of the ladder line to the pigtails on the center insulator. Tape the soldered connections.

Trim the length of the ladder line to 30 feet 4 inches if you want the antenna to resonate around the middle of 20 meters. I left my ladder line at 31 feet to resonate at the low end of the (20 meter CW) band. Strip an inch of insulation from the conductors on the free end of the ladder line. Solder the 2 conductors to the SO-239 (or HQ-1) connector center pin and body. (If you can't get a good solder connection to the SO-239 body, you can tin the wire and secure it to one of the 4 chassis holes with a nut, bolt and washer. Or, buy a Radio Works HQ-1 connector and just solder the ladder line to the 2 copper wires protruding from the molded plastic body).

Solder a PL-259 onto each end of your coax with the necessary adaptors (UG-176 for RG-8X coax).



KJ4SO

Facilities Information

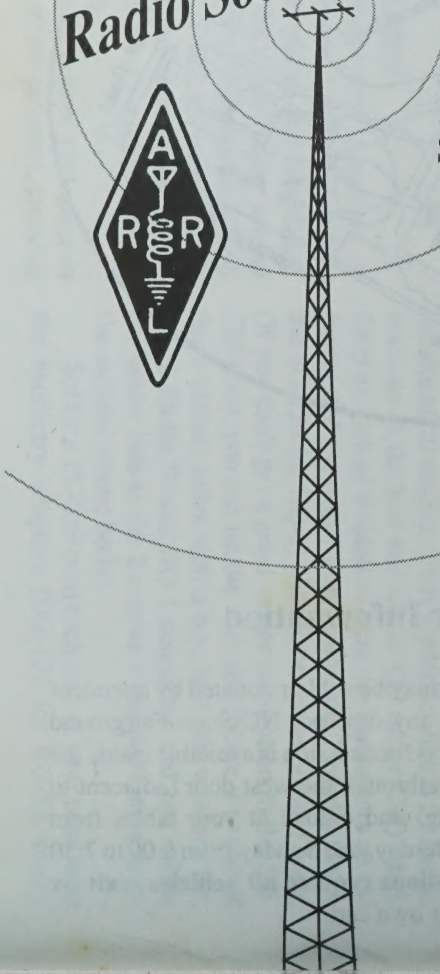
The Raleigh Amateur Radio Society welcomes you to RARSfest '91. Note the special Hamfest parking area shown above. Please follow the traffic and parking instructions while on the grounds. Daily parking is free. If you desire full hookup or overnight camper/RV parking, please check the box on the pre-registration form. A $10.00 per night fee will be collected on site by the NC State Fairgrounds Authorities.

Additional Vendor Information

No food, drink or weapons may be sold or donated by attendees in the hamfest building at any time per NC State Fairground Regulations. Full service food concession is available inside the hamfest building. Drive-in through the west door (adjacent to designated hamfest parking) and unload at your tables from 12:00 noon to 10:00 PM Saturday, and Sunday from 6:00 to 7:50 AM. **Fairgrounds regulations require all vehicles exit by 7:50 am.** Please bring your own cart.

The Raleigh Amateur Radio Society Presents:

Talk-in
146.04/64
146.28/88
Sat. & Sun.



RARSfest '91

19th Annual Hamfest and Computer Fair

Sunday April 14, 1991
8 AM- 4 PM

Jim Graham Building
N.C. State Fairgrounds
Raleigh, NC

Tickets: $5.00 Pre-registration
$6.00 At the door

Featuring:

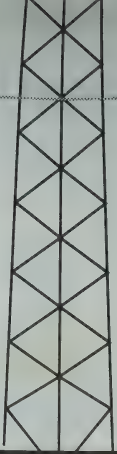
- **RARSfest Social**
  A welcoming party will be held Saturday night from 7-10 PM in the large meeting room inside the hamfest building. Enjoy refreshments and door prizes.

- **Amateur Radio Exams**
  Pre-register by April 10 (preferred). Exams will be held in the Holshouser building (see map, other side) starting PROMPTLY at 11 AM. Send completed form 610, copy of current license, code/theory certificates (CSCEs). If applicable, indicate the highest class of license you desire to be tested for and include a check or money order for $5.25 made out to "RARS VE" to:

- **Homebrew Contest**
  Show your best handywork in home-built projects like antennas, computers, test gear or radio equipment. Prize awarded.

- **Hamfest Prizes**
  Pre-registration, hourly and major prizes drawn during the day. You need not be present to win Pre-reg. or major prizes.
  1st ICOM IC-735 HF transceiver
  2nd ICOM IC-2400 dual band mobile
  3rd ICOM IC-2GAT 2-meter handheld.
  Pre-reg. Alinco DJ-160T 2-meter handheld
  Bring this flyer to register for the flyer prize.

Raleigh,NC 27614 (919)847-8512 (*Exam information only, please*).



- **Special Interest Meetings**
  Q.C.W.A., NAVMARS, NTS, ARES, and other meetings. Times will be announced at the Hamfest.

- **Novice & Tech. CW Contest**
  Novice and Technician class license holders are eligible to compete for a prize.

fleamarket and vendor area space: one 8' table with 2 chairs is $9.00. Five or more tables are $8.00 each. 120-Volt AC power is $18.00 per drop (bring your own extension cords). Call Rollin Ransom, NF4P (919) 269-4406 for further information.

- **Commercial Dealer Space**
  Booths and tables are available in designated dealer areas. Contact: Al Mullis, K4GOE, 7001 Rainwater Rd. Raleigh, NC 27615 (919) 850-0641 (leave message with the best time to return call).

SPECIAL SERVICE CLUB

ARRL

Come and be a part of RARSfest '91, an ARRL sanctioned hamfest.

Pre-registration Form (Pre-registration cut off April 6, 1991)

Print clearly, include S.A.S.E. Make checks payable to "RARS"

Name:__________ Call:______

Address:__________

City:________ State:____ Zip:______

☐ Yes, I will attend the Saturday night social.

☐ Yes, reserve Saturday overnight RV parking.

____Pre-registration tickets @ $5.00 ea $______

____Tables 1-4 with 2 chairs @ $9.00 ea. $______

____Tables 5 + @ $8.00 ea $______

____120-Volt AC power @ $18.00/drop $______

Total enclosed $______

Mail to: **Rollin Ransom, NF4P 1421 Parks Village Road Zebulon, NC 27597**

Raleigh Amateur Radio Society Presents

RARSfest '91

19th Annual Hamfest and Computer Fair

Sunday April 14, 1991 8 AM-4 PM
All Indoors—Jim Graham Building
NC State Fairgrounds, Raleigh

American Radio Relay League, Inc.
W. Reed Whitten, AB4W
Section Manager, Roanoke Division
1208 Oxford Place
Cary, NC 27511

Non-Profit Organization
U.S. Postage Paid
Greensboro, NC
Permit No. 370

Attach one end of the coax to the SO-239 connector. Carefully seal the PL-259/SO-239 connectors completely with Coax Seal to prevent moisture from entering the coax. Now we're ready to erect the antenna.

ERECTION

How you raise the antenna depends on your own situation, so I'll relate what I did. I decided on an inverted- Vee configuration, rather than horizontal. Using my trusty slingshot, 8-lb. fishing line and a 2 ounce lead weight, I sent a line over the top of a 60+ foot pine tree out in the woods behind the apartment. After detaching the weight, I tied one of my nylon ropes to the fishing line and hauled it over the top of the tree. I attached the nylon rope to the center insulator and attached 2 more nylon ropes, one to each of the end insulators. I hoisted the center of the antenna to the top of the tree, being careful not to get all the wires and ropes tangled (it's better if you can get someone to help you).

After securing the rope, I decided on the direction of the two legs (N-NE to S-SW in my case) and stretched out the two legs until I got the angle of the legs more than 120 degrees apart and the ends were elevated about 20 feet off the ground. After securing the end ropes to some other trees, I made sure that the coax hung straight down to the ground (where it is buried for several hundred feet to the radio shack). Now we're ready for the test!

PERFORMANCE

I connected the coax to my Kenwood TS-440, which has a built-in antenna tuner. I was able to load the antenna on the 80, 40, 30, 20, and 12 meter bands without any problems. On 10 and 15 meters, the antenna won't load on some frequencies unless I use my MFJ (external) antenna tuner. (This was also true of my Carolina Windom as I reported in my critique in the February Exciter).

Using 100 watts, I made 32 contacts with the G5RV antenna between January 15 and February 5. Most contacts were on CW, although one of my best DX contacts (FO0IGS in Tahiti) was on 10 meter sideband. My single 80 meter QSO was with HI8A in the Dominican Republic, where I received a 599 report. On 40 meters I made 25 of the 32 contacts including South Africa, Poland, Germany, Spain, France, Hungary, Sardinia, and 10 Soviet stations from all over the map. On 20 meters I made contact with 3B8FK on the island of Mauritius off the east coast of Africa, as well as with stations in the USSR and South America. In addition, the antenna functions very well as my SWL antenna outside the ham bands.

CONCLUSION

I enjoyed building and erecting my G5RV antenna. Even more, I'm enjoying using it (in what little spare time I've had lately) on all bands. The advantages of this antenna include: 80-10 meter band coverage (with a tuner), low cost, simplicity of construction and excellent DX performance. The main disadvantage is having to use my external tuner to load up on certain 15 and 10 meter frequencies.

The March issue of CQ magazine has an interesting article on the G5RV. The article states that computer modeling by ZS6BKW showed that the antenna will perform better if the flat top length is decreased from 102 feet to 92 feet 2 inches, and the ladder line increased from 30 feet 4 inches to 36 feet 9 inches. He says the SWR is lower on the 7, 14, 18 and 24 Mhz bands. I'll have to try it and compare my results with my current version.

I'm contemplating building a double-sized version of the G5RV to use on 40 meter CW (QRP) during Field Day 1991. It should outperform a half-wave dipole and be easier to build than the V-Beam I used last year. I'll let you know how it works!

• •

Callsign Lookup via Packet Radio

There is a local call lookup service available on packet for all USA calls. The K4PB BBS operates on 147.54 from Raleigh and is easy to access. Just type "C K4PB" and get connected. To lookup my name and address, for example, call, send "LOOKUP K9PM" and you get my full name and address (of course, omit the quotation marks). You must use capitalize the word LOOKUP.

73,

Paul/K9PM

Grounding

Part I
by
Joe White, WA4GIR

There are several different reasons for establishing a good ground for an amateur station and its associated antennas. Some of the reasons are:

1. To prevent hazardous voltages that might occur exist on the outside of electrical equipment that result from insulation failure within the equipment, i.e., hazards that result from a short circuit between the power conductors and the chassis.
2. To reduce or eliminate the presence of R.F. in the shack that interferes with equipment operation or causes R.F. burns.
3. To achieve better efficiency of antennas.
4. To provide a safe path for the draining away of current from a lightning strike, either the current that is in the lightning strike itself, or induced currents that may occur in conductors some distance away from the strike.

A single ground system could be designed that would accomplish all of the above, but such a system would be more difficult to install than most applications require. Many discussions of grounding don't always state the objective clearly and sometimes suggest a ground connection that is adequate for safety when a good R.F. ground is required. It was that confusion that exists in a few references that prompted me to write this article. I'm not going to try to cover all the techniques associated with creating a good ground system because there are many hams in this club that know a lot more about this subject than I ever will and there are a number of references that discuss those topics better than I ever could. I'll identify some of these references at the end of this article and briefly describe the type of information that is in them.

Actually, my purpose in writing this is, first and foremost, to get Vince off my back, since he is the one that put out a **challenge** to randomly-selected club members for the EXCITER, a challenge that has some similarities with the practice of conscription. I may be prejudiced, but since my name was among the first round of challenged members, I'm having a hard time believing this was truly a random selection process. [Ed Note: He doubts my word??!!] But as long as I have to do something, I thought that I might as well try to shed some light on a subject that is often misunderstood.

Electrical Safety Ground

When you hear grounding of electrical apparatus mentioned, the first thing you tend to think of is connecting the third wire in the power line to your 110 Vac- powered power tool, appliance or radio. Since some equipment operate fine with only a two-conductor plug, it's sometimes not clear why you need the grounding plug and when.

The safety ground is a third conductor that is intended to connect any exposed surfaces of electrical equipment to ground through a low resistance connection. This improves safety by two ways: (1) Leakages currents resulting from a medium or high resistance connections between power wiring within the equipment and the exposed chassis or case, are drained away harmlessly, and the chassis is kept at ground potential, that is the there is no voltage between the chassis or case and ground so a person touching both at the same time will not have any current forced through them, and (2) Fault currents resulting from an insulation failure, that allows one of the power line conductors to contact the equipment chassis or case, are conducted for a period of time sufficient for an overcurrent device to trip, completely removing the hazard until repairs are made.

All electrical equipment should be grounded with a separate non-current carrying ground unless the equipment is sufficiently well insulated so that there is no possibility of "short-circuits" between the power wiring and any accessible part of the it. Equipment, usually power tools, designed in this manner are called "double insulated". These are tools with two layers of insulation, so if one fails, the user is still protected by an additional layer.

During normal operation of equipment, the electrical current flows to and from it through the two line conductors -- no current flows in a ground conductor. Any current flowing in that conductor indicates a problem which should be corrected. If a leakage path exists in the electrical equipment between the line and the outside case, the ground conductor will keep the outside of an equipment case at ground potential. The ground conductor effectively removes an electrocution hazard but the safety provided by this grounding mechanism is totally dependent on the continuity of the ground conductor. If the ground connection is broken then the shock hazard returns. This can be a potentially serious problem where defective tools may be used with extension cords. Since a good ground connection is not required for operation of a power tool, open circuits that develop in the ground connection of a extension cord may go unnoticed, even thought the cord may be frequently used. If the defective cord is used with a tool that has leakage to the case, a shock hazard is created. Ground fault current interruptors are used to prevent this hazard.

A ground fault current interruptor, GFCI, will detect leakage currents, both those flowing harmlessly through a ground conductor and those flowing through unintentional paths to ground such as through your body. These devices work by comparing the current going to the equipment though one line conductor with the current returning in the other. During operation of any electrical equipment these two currents should be equal -- any difference indicates current is returning to the power source through an alternate path through ground, either through the ground conductor or through a leakage path involving actual ground. These devices are intended to be life saving devices that open the circuit when a person supplies part of the leakage path and leakage current passes through his body. For that reason, are required around locations where contact with line- powered equipment and grounded conductors may occur such as in bathrooms and outdoors. However, the GFCIs also act as a warning device, providing an indication of a leakage current by tripping even when a leakage current is being safely conducted away by the ground wire, indicating the existence of a potential hazard that should be repaired before a situation occurs where it does pose a life-threatening hazard (i.e., when the tool is used with an extension cord that has a defective ground connector.

For an electrical safety ground to be effective:

(1) All ground wiring must be well connected. Certain kinds of conduit can't be used as a ground conductor since oxidation at the joints may lead to poor connection between the conduit sections. In general, 3-wire to 2-wire adapters should not be used since these bypass the ground connection unless that little green wire or spade lug that nobody ever hooks up is connected to the safety ground.

(2) The ground connectors must be of sufficient size to conduct enough current to trip the fuse or circuit breaker. It should provide a sufficiently low resistance path that even sizable leakage currents flowing in the ground will not cause any significant voltage drop in the ground conductor, since any voltage drop in the ground conductor results in an exposed potential on the equipment case. Routing of the ground conductor is not critical since inductance and coupling to this wire are not concerns at power line frequencies. (This is not true for R.F. or lightning -- lead inductance from coiled or bunched ground conductors may render the ground connection useless -- more on this later.).

(3) The ground should be connected to a good ground electrode and to the neutral conductor where it enters the house. Requirements for safety grounding are given in the National Electrical Code (see references at the end of the article).

Next month, we'll discuss RF grounding

• •

RARS Class Biggest Ever!!

The Spring '91 RARS Novice / Tech class got under way on Tuesday, 19 February. Fifty-three (53!!) students showed up for the first night of class, and it is expected several more may show up before we are forced to cut off registration!!

Students showed a broad cross-section: there were folks ranging from an estimated 10 years old, up thru 65+. As always, it was quite good to see a fair number of ladies in the group. The question of "no-code" was asked, and of the whole group only about 5 desired the "no-code" test. The majority want to learn the code. We in RARS wish all the students the best of luck in their studies, and look forwared to talking to them on the air, or meeting them at a RARS meeting!

MAKING ANTENNAS PLAY

By Steve Modena AB4EL

Current Balun Details

There are two points to finish up in the discussion on winding a current balun from coax: the role of series resonance and validating the inductance achieved.

I wound 24 turns of RG59U coax onto a piece of 4 inch diameter thin-walled PVC drain pipe. Using the standard formula for calculating inductance of a single layer solenoid (coil), I estimated an inductance of 34 microHenries which would present an impedance of 1500 ohms at 7.2335 MHz and 4535 ohms at 21.225 MHz. These values of impedance are fine for use with a 40 meter dipole operated on the 40 and 15 meter bands.

The question is: are there frequencies at which the ''choking'' action of this coil would fail? A straight piece of an electrical conductor (coax, here) has inductance. The inductance can be increased by winding the coax into a coil. In doing so, inter-turn capacitance appears. That is, adjacent and also non-adjacent pairs of turns act as capacitors. This combination of inductance and capacitance can form a resonant circuit. If the combination acts as a ''series'' resonant circuit, the capacitive and inductive reactances will cancel and the ''choke'' will act as a pure low resistance circuit (short circuit) to RF, ie. failure to choke.

I coupled my Heathkit Dip Oscillator to the coil and swept the frequency range 1 to 30 MHz. There was a dip at 25 MHz. This coincides with the 12 meter Amateur band. This current balun would work OK on 40, 30, 20, 17, 15 and 10 meters, but not on 12 meters! The point is: use a dip oscillator to determine whether the presence of any self resonances would cause a problem.

Here is how I verified the inductance of the coil of coax. I had a spare piece of RG59U long enough to wind 19 turns on the 4 inch form. The standard coil formula calculation inductance = (19x19)(4.375x3.75)/((18x4.375)+40x5)) gives an estimate of 24.8 microHenries (see Nov. Exciter, this column). The ARRL Handbook indicates that RG59U coax has 28.5 picoFarads capactitance per foot-length between the center conductor and the INSIDE of the braid. This is not the stray capacitance mentioned above. I used 4 feet of RG59U as a capacitor of value 114 picoFarads.

I connected the braid of this ''capacitor'' to the braid at one end of the 19 turn coil of coax; I connected the inner conductor of the ''capacitor'' to the braid at the other end of the 19 turns of coax. This forms a parallel resonant ''tank'' circuit. Sweeping with the coupled dip oscillator, dips ocurred at 2.8 MHz and 27 MHz. Disconnecting the ''capacitor'', a dip ocurred at 29 MHz. Shorting the two ends of the 19 turn coil, a dip ocurred at 24 MHz.

Here is the interpretation: Using the standard formula L x C = 4 x PI x PI x Freq x Freq, and knowing Freq = 2.8 MHz and C = 114 pF, then the coil is calculated to be 27.4 microHenries (by the dip meter measurement). This is close to the coil formula calculation of 24.8 microHenries. Therefore, you can use the ''robust'' standard coil formula to dimension coils wound from RG58U or RG59U or similar dimension coax.

The 29 MHz self resonance frequency of the 19 turn coil is lowered, as expected, when the 114 pF capacitor is put across the coil. Note that shorting the coil moves the 29 MHz self resonance to 24 MHz, consistant with the idea that most of the ''stray'' capacitance of the coax coil is of the series resonance-type and therefore is still effective in forming a resonant circuit for RF despite shorting the coil. It is precisely this series resonance effect that can inactivate the choking effect of the current balun at certain frequencies.

One final thought: some of this probably seems pretty far out stuff for the Exciter. It's not for everyone. I find in writing about antennas that it ranges from the simple (obvious) to learning new things for myself. None of my stuff is sophisticated; it just scratches the surface. I've seen ads for HP Network Analyzers that draw a Smith Chart on the 'scope. But **simple principles, simple instruments and a little patience can get you pretty far.**

73!

AB4EL

Advertisement Casts Cloud of Doom Over Packet Operation

An amateur packet message addressed to "ALL@USA" has resulted in three packet operators receiving notices of apparent liability from the FCC, and notices of apparent violation to some 10 other packet BBS operators, whose stations ***automatically*** re-transmitted the illegal message.

The message, sent by WA3QNS, asked recipients to phone a "1-900 number" (belonging to the New York City based "Coalition to Stop US Intervention in the Middle East") to tell President Bush "No War." "A record of each call, by area code and region, will be taken with the petitions to Washington," the message said. Dialling the number would add a $10 charge to your phone bill.

According to the ARRL Pres David Sumner, the message was illegal on two counts: firstly, the 1-900 issue clearly promotes the business activities of the sponsoring organization, a long time no-no on the ham bands. Secondly, having absolutely nothing to do with Amateur Radio (other than using it as an advertising medium), the message fails to qualify as an information bulletin, and therefore can be construed as "broadcasting." Legality aside, this message has also violated the longtime "gentleman's agreement" to keep potentially controversial subjects of politics and religion off the ham bands.

Of greater importance than the illegal message, however, is the precedent of the FCC holding packet BBS operators personally responsible for messages that are ***automatically*** re-transmitted by their stations. Implied with the fines is that the BBS operators need to personally read and monitor every message sent through their BBS for propriety. Large BBS's in major metropolitan areas may pass **thousands** of messages every month. Having the BBS op read each and every one before allowing it to be passed on the network is an impossibility. It was stated by one BBS op that rather than be held personally responsible for every message, BBS ops would be wise to simple turn their systems off, and thus end the "store and forward" capability of packet operation as we know it today.

[Ed. Comment: As J.J. Freeman, the FCC Engineer in Charge of the Norfolk Office is on the EXCITER mailing list, and Mr. Freeman initiated the FCC action reported above, allow me my 2 cents: Bravo for taking action!!! But rather than killing the entire packet network as a consequence, how 'bout just holding that yerk (Swedish pronunciation) who initiated the message financially responsible for ALL fines incurred by EVERY BBS that automatically retransmitted it?? I bet that would discourage future advertising!!

Anyway, it will certainly be interesting to hear what the ultimate outcome of this one is...!]

• •

ARRL SHORTS

Chuck Littlewood, K4HF

80 Meter Novice Band will move to 3675KHz to 3725KHz effective March 16, 1991, to reduce interference with voice operations per recent FCC Report & Order.

Don't forget to see that the ARRL **Incoming QSL Bureau** has enough postage on your "on file" envelopes in light of the pending Postage increase.

Highlights of ARRL Board of Directors Meeting, Jan. 18-19, 1991: Responding to the general support expressed by the amateur community for the FCC codeless Technician license decision granting all privileges above 30 MHz, determined that the League would not petition for reconsideration.

Directed staff to implement a program for **field checking of QSL cards** for initial applications of DXCC as set forth in guidelnes specified by the Membership Services Committee.

Renewed it's commitment to Amateur Radio education, stressing knowledge, skill, traditions and dedication of purpose. It resolved to renew the tradition of one-on-one, "Elmer" effort.

Heath Company has quit the "kit" business. Kits are currently available at discount prices.

• •

Sign Seen in Men's Clothing Store:

"Your money back if your wife is not satisfied"
(?!?)

DX PACKET CLUSTERS

A NEW WAY TO INCREASE YOUR COUNTRY COUNT FAST!

by Paul Sobon, N00T

Ever wonder what it would be like if you could have an antenna and rig for every band, listening for DX stations all at the same time? Ever wonder what it would be like to have over 100 of your fellow hams listening for rare DX for you and telling you where to set your TX to work him?

I'll be the first to admit that I'm not the world's greatest DXer. In fact I'm only just beginning to get close to my first DXCC award. But I've discovered a new tool in the ham radio arsenal that sure makes finding and working DX fun and easy. It's all possible with the network of DX PacketCluster running all over the USA, Canada, and parts of Europe.

Although I had heard "packet" on the low bands and also on 2 meters, I never gave it much thought or interest. At a recent hamfest in Virginia Beach, Steve N4TQO and I saw our first real demo of what a DX PacketCluster hook-up looked like and we were sold. We had to have it. Anyone who has access to a PC or "dumb" terminal, a TNC and a 2 meter radio (e.g. I use a handheld ICOM O2AT) can get on DX Packet Cluster!

A typical cluster node in the network may have 10 to 20 stations linked to it, and there may be up to 11 nodes in the network reaching from Winston-Salem to the Maryland/D.C. area, as is the case from a northern network from the KC4LWI DX packet cluster in Roanoke, VA. Total stations could reasonably reach 120 for this network. A network to the south reaches places like Charlotte, Atlanta and states of Alabama, South Carolina and Kentucky, and typically gets 15 to 18 nodes up and between 200 and 300 stations linked to it at the same time.

I understand that as this article is being written, KC4LWI has plans to link to this southern network soon. Because of the high location in the Roanoke area, the local node link in north Raleigh -- SWAN (N00T-2) on 147.57 MHZ -- links into KC4LWI via Loc Cahos (3800 feet ASL).

Once you connect to the cluster through SWAN, you have over 90 commands to choose from. You can get the latest five DX announcements (or spots as they are known) put on the cluster, the date and time, and who reported them simply by typing SHOW/DX (or SH/D for short). An example display is shown below:

```
14243.0 TG9TSS    20-FEB-1991  0100Z  <N3FAS>
28530.0 DU1KK     20-FEB-1991  0100Z  <KC3EK>
28022.6 BY4RB     20-FEB-1991  0055Z  <W3PLI>
28550.0 K6WJ/UC3 20-FEB-199  10054Z  <K3ZO>
14235.0 UZ0AWO    20-FEB-1991  0049Z  <KC4GSD>
```

And you don't have to stay glued to your screen to keep up with the DX -- every time a new DX spot is announced, your computer (or terminal) beeps to call your attention!

In addition to SHOW/DX, there is SHOW/HEADING to show you where to point your beam. The first time you log onto the cluster, you can give the cluster your coordinates - (LAT. and LONG.) - which it puts into memory, and it calculates your beam headings for any country you wish. Another feature I like is SHOW/QSL. This feature accesses the W6GO "GO List", an exclusive on-line database that gives you the latest QSL manager info for that rare DXpedition you just worked. Another feature I like is the SHOW/BUC, which give you the updated U.S. Callbook on-line from "BUCKMASTER" for QSL information.

For those who can access the RARS bulletin board, I have uploaded the latest "USER COMMAND SUMMARY" for the KC4LWI Packet Cluster. I will also have a limited number of these available at the next RARS meeting.

If you are interested in getting into DX PacketCluster and working DX a bit faster, feel free to call me, Paul N00T (847-8830), or Steve N4TQO (556-8889), or Bill K4CIA (876-2686) for more information.

This is the first in a series of articles on tools to assist you in improving your DXing.

73 and Good DX

Paul - N0OT

(PacketCluster is a trademark of Pavillion Software, Hudson, MA)

The RARS Challenge

As described in the December EXCITER, yer humble Editor is seeking new material / ideas for the newsletter. Each month we will extend the challenge to 5 or so members, selected at random, who are requested to supply some info to the Editor. While a 2 page feature article would be nice, I'll settle for any information you'd care to share with the club. What u do for a living, what your interests in amateur radio are(or other interests, as well); what you like about RARS, what you'd like to see changed. Anything at all. Input can be typed, hand written, or even a telephone call! The first batch of replies were GREAT!! There was no second batch. Come 'on folks, we're not asking for "War & Peace," just a little info!!

The RARS Challenge Stats:

Call	Extended/Due Date		Status
N4ECU	Dec	Jan 16	Received
AB4T	Dec	Jan 16	Received
KM4EP	Dec	Jan 16	Received
WA4GIR	Dec	Jan 16	Received
WA4SKH	Dec	**Jan 16**	**Still Waiting!!**
W2ULO	Jan	Feb 12	Still Waiting
WB4INM	Jan	Feb 12	Still Waiting
N4OIC	Jan	Feb 12	Still Waiting
K1ANX	Jan	Feb 12	Still Waiting
WD8DIT	Jan	Feb 12	Still Waiting
K4HJK	Feb	Mar 13	---
KC4JJZ	Feb	Mar 13	Received!
KF4OT	Feb	Mar 13	---
N4SSS	Feb	Mar 13	---
WA2MYZ	Feb	Mar 13	---
KK4EF	Mar	Apr 13	---
N4MWN	Mar	Apr 13	---
KC4UQG	Mar	Apr 13	---
WB4ZSM	Mar	Apr 13	---
K4GHJ	Mar	Apr 13	---

• •

Sign Seen in Paint Store:
"Husbands Choosing Colors Must
Have a Note From their Wives"

Classified Column

Sale:

IBM Portable PC (XT) with 640K on motherboard, 20 MB hard drive, 1.44 MB 3.5" floppy, builtin CGA display, clock, serial & parallel ports. Three empty expansion slots. $600. K8AC, 851-7546

Drake R4C (all filters and Sherwood mods), T4XC, ETEK digital readout, FS-4 synthesizer (makes R4C general coverage), C4 station console with remote coax switch. Will split up at right price. **Heath SB-221 KW linear** amplifier with 10 MTRS, factory built, and spotless. $590. **Murch UT-2000B 2KW ultimate circuit tuner** with antenna selector, 160-10 MTRS. $200. **AEA CP-1 RTTY interface for C-64 or IBM PC.** $75. **MFJ Grandmaster memory keyer, $75.** Offers considered - come see if interested.

Floyd, K8AC, 851-7546.

THE PINE BOX

FURNITURE & GIFTS

Cameron Village Shopping Center

Arline Bliss
411 Daniels St.

Jeff Bliss
833-8104

Custom Computer

PC Sales, Service, and Consulting
Specializing in Office Automation and Computer Graphics
Your Total Solution

Woody Winstead
KJ4SO

138 Mine Lake Ct. Raleigh, N.C. 27615 (919) 870-1044

Amateur Radio -- A National Resource

Raleigh Amateur Radio Society, Inc.
P.O. Box 17124
Raleigh, NC 27619

MR. SHERMAN STARNES W4TZU
ROUTE 1, BOX 99
FRANKLINTON NC 27525

Next Regular RARS Meeting: Wednesday, March 6, 7:30 PM
Raleigh YMCA , 1601 Hillsborough St.
RARS Nets: Daily @ 8:00 PM on 146.04/64
10 Meter - Tuesdays, 7:00 PM on 28.364 MHz
YL Info Net - Wednesdays, 9:30 PM, 04/64
RARS Trader's Net - Fridays, 9:00 PM, 04/64
Technical Information Net - Saturdays, 8:30 PM, 04/64
RARS Computer Bulletin Board: 781-2530

Events Calendar

MAR	2,3	ARRL International DX Contest - Phone
MAR	**6**	**RARS Birthday Party!! 7PM, YMCA, See inside ...**
MAR	**9, 10**	**Hamfest!!, Charlotte, NC. Talk In: 145.290. Info: 704-536-7373**
MAR	13	RARS Homebrew SIG, 7:30PM, Info: KM4BU @ 481-3856
MAR	14	RARS VHF/UHF/2M SIG Meeting, Info: WA4MJF @ 266-4434
MAR	18	HF SIG Meeting, 7:30 PM Info: N4UOF @ 469-1758.
MAR	20	RARS Board Meeting, 7PM, YMCA, ALL MEMBERS WELCOME!!
MAR	23, 24	CQ World Wide WPX Contest - Phone
MAR	26	Amateur Exams -- McKimmon Center, NCSU 7:30 PM, AA4MY for info.
MAR	27	Hamfest Meeting, YMCA
APR	**14**	**RARSFEST '91!! (Hospitality on Sat. night, Apr 13)**
MAY	**25**	**Hamfest!! Durham, NC**